

Electronic Waste

Draft Guidelines for Environmentally Sound Management of Electronic Waste

CHAPTER 1

INTRODUCTION & BACKGROUND

Introduction

E-waste is one of the fastest growing waste streams in the world. In developed countries, currently, it equals 1% of total solid waste generation and is expected to grow to 2% by 2010. In USA, it accounts 1% to 3% of the total municipal waste generation. In EU, historically, E-waste is growing three times faster than average annual municipal solid waste generation. A recent source estimates that total amount of E-waste generation in EU ranges from 5 to 7 million tonnes per annum or about 14 to 15 kg per capita and is expected to grow at a rate of 3% to 5% per year. In developing countries, it ranges 0.01% to 1% of the total municipal solid waste generation. In China and India, though annual generation per capita is less than 1 kg, it is growing at an exponential pace. The increasing "market penetration" in developing countries, "replacement market" in developed countries and "high obsolescence rate" make E-waste as one of the fastest waste stream. Environmental issues and trade associated with E-waste at local, trans boundary and international level has driven many countries to introduce interventions.

Indian Scenario

The Electronics industry has emerged as the fastest growing segment of Indian industry both in terms of production and exports. The share of software services in electronics and IT sector has gone up from 38.7 per cent in 1998-99 to 61.8 percent in 2003-04. A review of the industry statistics show that in 1990-91, hardware accounted for nearly 50% of total IT revenues while software's share was 22%. The scenario changed by 1994-95, with hardware share falling to 38% and software's share rising to 41%. This shift in the IT industry began with liberalization, and the opening up of Indian markets together with which there was a change in India's import policies vis-à-vis hardware leading to substitution of domestically produced hardware by imports. Since the early 1990s, the software industry has been growing at a compound annual growth rate of over 46% (supply chain management, 1999). Output of computers in value terms, for example, increased by 36.0, 19.7 and 57.6 per cent in 2000-01, 2002-03, and 2003-04, respectively. Within this segment, the IT industry is prime mover with an annual growth rate of 42.4% between 1995 and 2000. By the end of financial year 2005-06, India had an installed base of 4.64 million desktops, about 431 thousand notebooks and 89 thousand servers. As per MAIT estimates, the Indian PC industry are growing at a 25% compounded annual growth rate.

This growth has significant economic and social impacts. The increase of electronic products, consumption rates and higher obsolescence rate leads to higher generation of electronic waste (e-waste). The increasing obsolescence rates of electronic products added to the huge import of junk electronics from abroad create complex scenario for solid waste management in India.

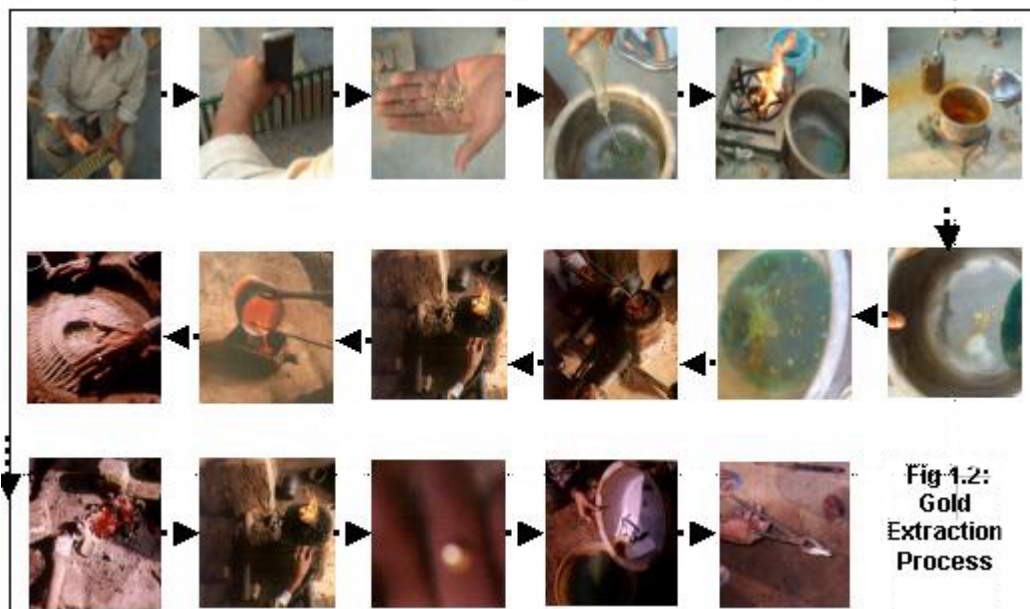
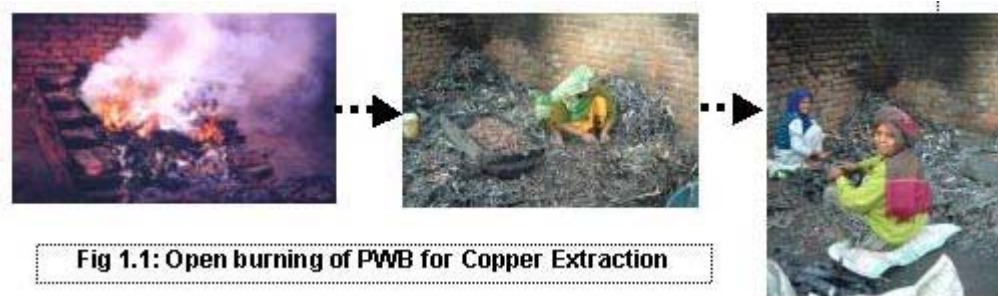
The e-waste inventory based on this obsolescence rate and installed base in India for the year 2005 has been estimated to be 146180.00 tonnes. This is expected to exceed 8,00,000 tonnes by 2012. Sixty-five cities in India generate more than 60% of the total e-waste generated in India. Ten states generate 70% of the total e-waste generated in India. Maharashtra ranks first followed by Tamil Nadu, Andhra Pradesh, Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab in the list of e-waste generating states in India. Among top ten cities generating e-waste, Mumbai ranks first followed by Delhi, Bangalore, Chennai, Kolkata, Ahmedabad, Hyderabad, Pune, Surat and Nagpur. There are two small WEEE/E-waste dismantling facilities are functioning in Chennai and Bangalore. There is no large scale organized e-waste recycling facility in India and the entire recycling exists in un-organized sector.

Need for Guidelines for “Environmentally Sound Management of E-Waste”

Based on the outcomes of these studies and way forward of national workshop on electronic waste management held in March 2004 and June 2005 organized by CPCB and Ministry of Environment and Forests (MoEF), a need to carry out this study has been identified due to following reasons.

a) Toxic components:

The recycling practices adopted lead to uncontrolled release of toxic materials in the environment. Some of the documentary evidence of such recycling is shown in Figure 1.1 and Figure 1.2.



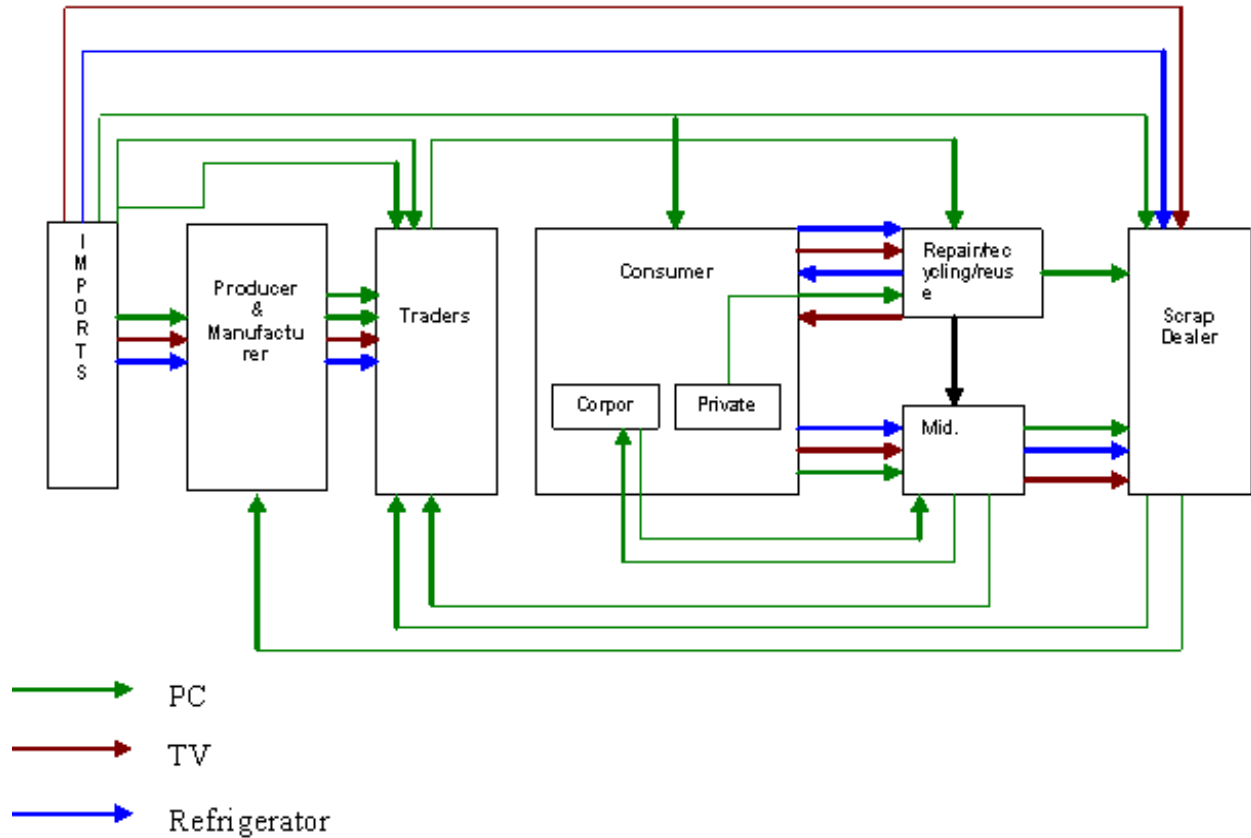
b) Increasing amount of E- Waste:

Product obsolescence is becoming more rapid since the speed of innovation and the dynamism of product manufacturing / marketing has resulted in a short life span (less than two years) for many computer products. Short product life span coupled with exponential increase at an average 15% per year will result in doubling of the volume of E-waste over the next five to six years.

c) Lack of environmentally sound recycling infrastructure:

It has been established that E-waste, in the absence of proper disposal, find their way to scrap dealers, which are further pushed into dismantler's, supply chain as shown in figure 1.3.

Fig 1.3: E-waste Trade Value Chain



Existing environmentally sound recycling infrastructure in place is not equipped to handle the increasing amounts of E-waste. The major dismantling operations are occurring in unorganized/ informal sector in hazardous manner. The potential of increased E-waste generation and lack of adequate recycling facilities have attracted the attention of a number of recyclers globally, expressing interest to start recycling facility in India.